

REMARKS

With entry of the foregoing amendments, claims 1-52 are pending in this application. In the previous office action, claims 26-39 were allowed. Claims 1-25 and 40-44 stand rejected. Claims 1, 25 and 40 have been amended. Claims 45-52 have been added. No new matter is introduced. Reconsideration is respectfully requested.

Claim Allowance

Applicants thank the Examiner for allowing claims 26-39 as originally filed.

Claim Rejections – 35 U.S.C. § 112

The Examiner rejected claim 25 under 35 U.S.C. § 112, second paragraph, as being indefinite for a lack of antecedent basis for the term “the additional bandwidth.” Claim 25 has been amended to provide proper antecedent basis for this term by correcting the claim dependency. This rejection is now overcome.

Claim Rejections – 35 U.S.C. §§ 102/103

The Examiner rejected claims 1-11, 13-16, 21-25 and 40-44 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,166,929 or corresponding U.S. Reissue Patent Re37,301 to Lo. The Examiner also rejected claims 12 and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Lo in view of U.S. Patent 5,377,192 to Goodings. With entry of the foregoing amendments, Applicants respectfully traverse this rejection.

The present invention is directed towards a method and system for enhancing the utilization of bandwidth resources in a wireless communication system. As discussed in the Background of the specification as originally filed, most packet-switched system attempt to improve efficiency and maximize capacity by allocating dedicated channels for each field unit on a continuous or as-needed basis to support the transmission of messages, including acknowledgment and feedback messages.

Due to the sporadic nature of acknowledgment and feedback messages, dedicated channels that are allocated on an as-needed basis incur substantial overhead processing delays.

Likewise, continuous allocation of a dedicated channel for use by a particular field unit for transmission of such messages is often a waste of resources, especially when multiple field units are competing for their use and the channel is capable of carrying more traffic than merely occasional messages.

In order to enhance the utilization of bandwidth resources in a wireless communication system, the present invention provides a shared reverse link channel that is continuously allocated for carrying acknowledgment or feedback information from multiple field units to a base station as now recited in claims 1 and 40 respectively. Such enhanced utilization can be in the form reduced overhead processing delays due to continuous allocation of the shared channel for transmission of the acknowledgment/feedback information or increased system capacity due to the sharing of bandwidth resources by field units transmitting the acknowledgment/feedback information.

Specifically, amended claim 1 recites the step of “allocating at least one reverse link channel to be a shared acknowledgment channel that is continuously allocated for carrying acknowledgment information from each of multiple field unit to a base station” and “transmitting acknowledgment information associated the data payload [received from the base station] from the corresponding field unit to the base station over the shared acknowledgment channel.” Claim 40 is similar to claim 1 except that claim 40 allocates at least one reverse link channel to be a shared feedback channel that is continuously allocated for carrying feedback information from each of multiple field units to a base station. Support for claims 1 and 40 as now amended can be found at least in FIGS. 1 and 3 and in the specification as originally filed on page 10, line 12 through page 11, line 18; page 13, line 24 through 14, line 3; page 14, lines 7-12; page 18, line 19 through page 22, line 25.

Lo fails to teach or suggest a shared acknowledgment channel or a shared feedback channel that is continuously allocated for carrying acknowledgment or feedback information, respectively, from multiple field units to a base station in order to enhance utilization of bandwidth resources in a wireless communication system. In particular, Lo discloses a base station that allocates a forward link channel through which a base station is able to broadcast the status of a shared reverse link access channel during a previous timeslot (e.g., idle, collision, successful transmission). Based on this broadcast status information, a mobile unit waiting to

transmit an access request over the shared access channel for allocation of a traffic channel is able to determine whether it can send with a reduced risk of collision. (*See* Lo '929, col. 2, line 62 to col. 3, line 14, col. 3, line 50 to col. 5, line 13; *See also* Lo '301, col. 2, line 61 to col. 3, line 12, col. 3, line 47 to col. 4, line 11).

The Examiner broadly interprets the reverse channel of Lo as the claimed acknowledgment channel or feedback channel. Applicants respectfully disagree. At best, Lo discusses a known reverse link channel, referred to as an access channel, for transmitting access requests from multiple subscriber units to a base station. This shared access channel does not carry acknowledgment or feedback information associated with a data payload from a base station as recited in claims 1 and 40 respectively. Rather, in Lo, each access request transmitted over the shared access channel is a request for allocation of a dedicated traffic channel over which an individual subscriber unit can transmit information. As previously discussed, dedicated channels that are allocated to a particular subscriber unit to transmit acknowledgment or feedback information is wasteful of bandwidth resources. Thus, unlike the present invention as recited in amended claims 1 and 40, the use of the shared access channel in Lo does not enhance utilization of bandwidth resources with respect to transmission of acknowledgment or feedback information.

Goodings also does not teach or suggest this feature. In contrast, Goodings discusses a radio data communication system having a mechanism for reducing collisions between contending remote stations. Referring to Fig. 1 of Goodings, he states that there are a pair of radio frequency channels between the base station and each mobile station, consisting of "one for transmission of data from the base station 1 to the mobile station 2 (downlink) and the other of which is for transmission of data from the mobile station 2 to the base station 1 (uplink)" (*See* Goodings, col. 3, line 65 to col. 4, line 7).

For at least these reasons, both Lo and Goodings each fails to teach or suggest a shared acknowledgment channel or a shared feedback channel that is continuously allocated for carrying acknowledgment or feedback information, respectively, from multiple field units to a base station in order to enhance utilization of bandwidth resources in a wireless communication system.

Claims 1 and 40 as now amended are novel and non-obvious in view of the prior art of record, and thus are patentable.

Furthermore, by virtue of at least their dependency on claim 1 or 40, respectively, claims 2-25 and 41-44 are also patentable.

New Claims 45-52


New claims 45-52 have been added. Specifically, new claims 45-50 are system apparatus claims that correspond to particular method claims as now amended. Specifically, system claims 45 and 46 correspond to method claims 1 and 2-3, respectively. System claims 47 and 48 correspond to method claims 26 and 27, 32, respectively. System claims 49 and 50 correspond to method claims 40 and 42, respectively. Claims 50 and 52 clarify that by transmitting acknowledgment information associated with the data payload from the corresponding field unit to the base station over the shared acknowledgment channel, the utilization of bandwidth resources in the wireless communication system can be enhanced. The same reasons for patentability previously discussed with respect to method claims 1-44 also apply to new claims 45-52 and thus are patentable. Allowance is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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